

FIG. 1

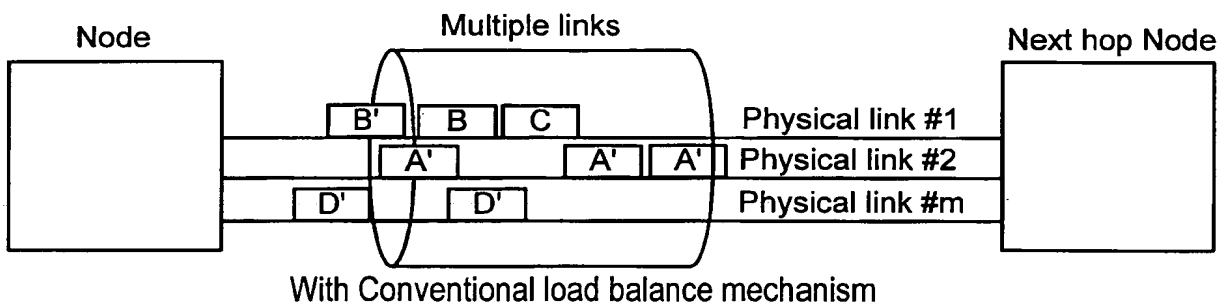


FIG. 2

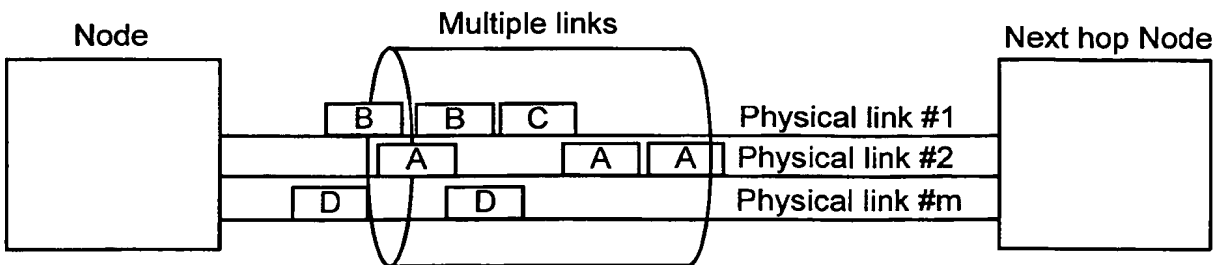
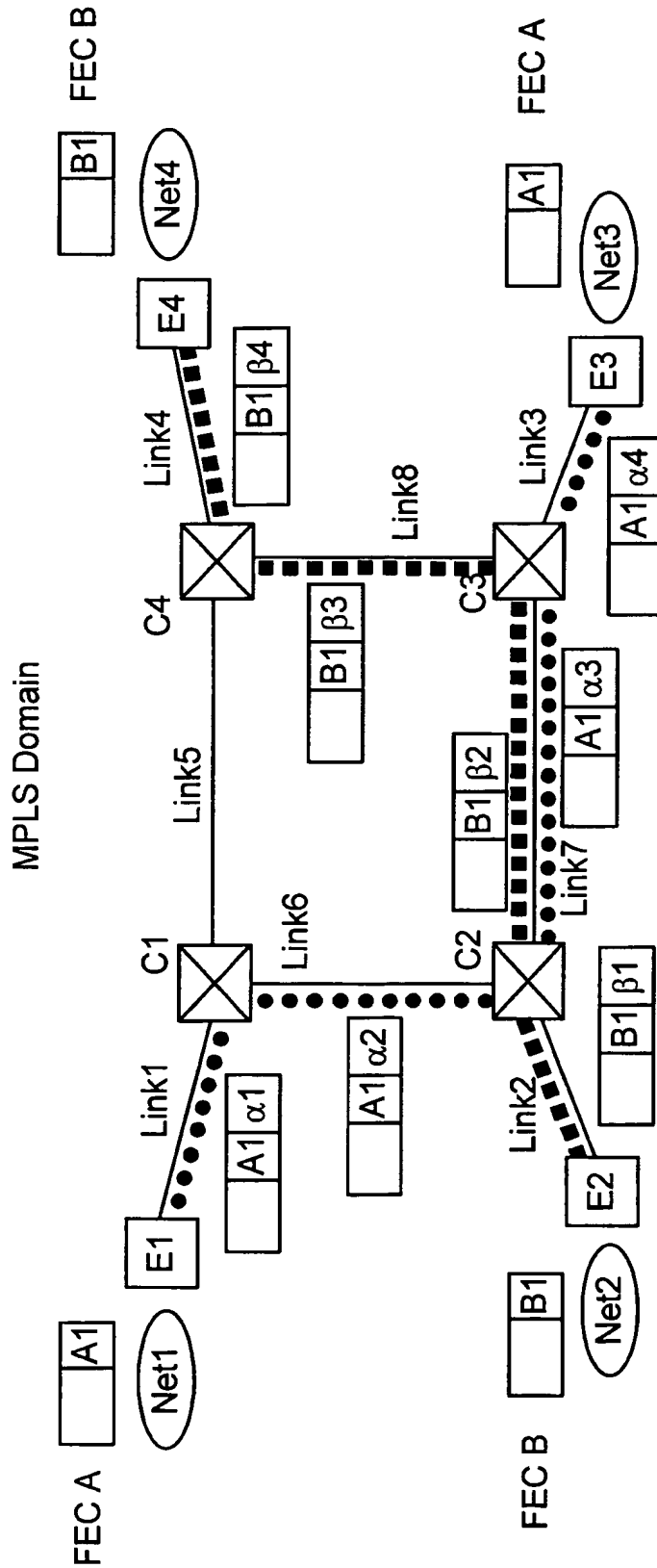


FIG. 3





C1, C2, C3, C4: Label Switch Router (CORE), E1, E2, E3, E4: Label Switch Router (Edge),
 A1, B1: IP Destination Address, $\alpha1$, $\alpha2$, $\alpha3$, $\alpha4$, $\beta1$, $\beta2$, $\beta3$, $\beta4$: Label
 Example of the network (MPLS) domain

FIG. 4

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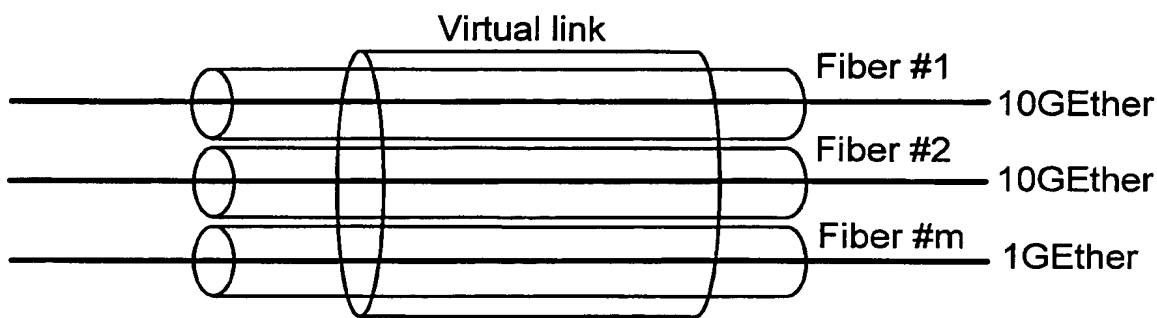


FIG. 5A

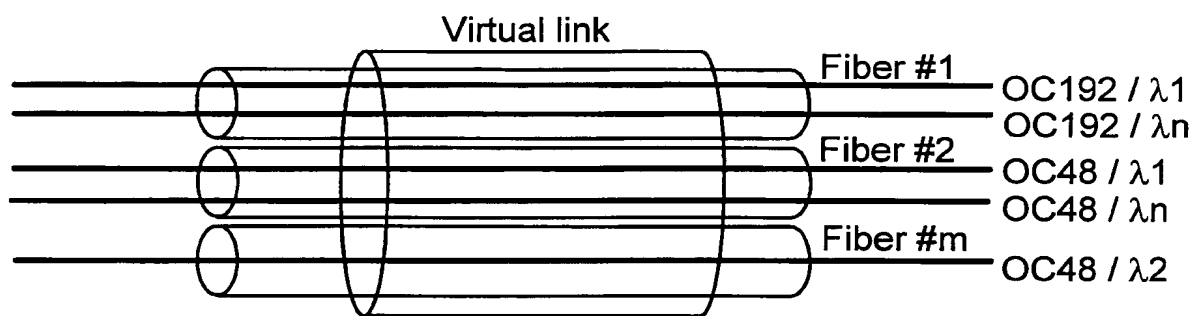


FIG. 5B

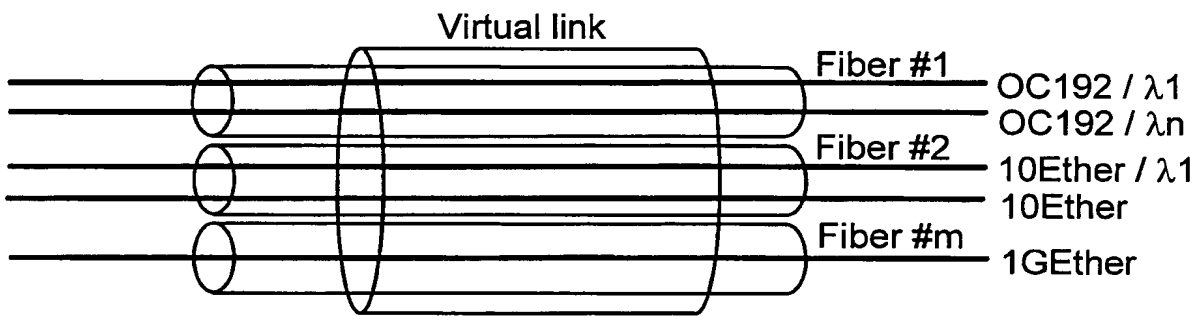


FIG. 5C

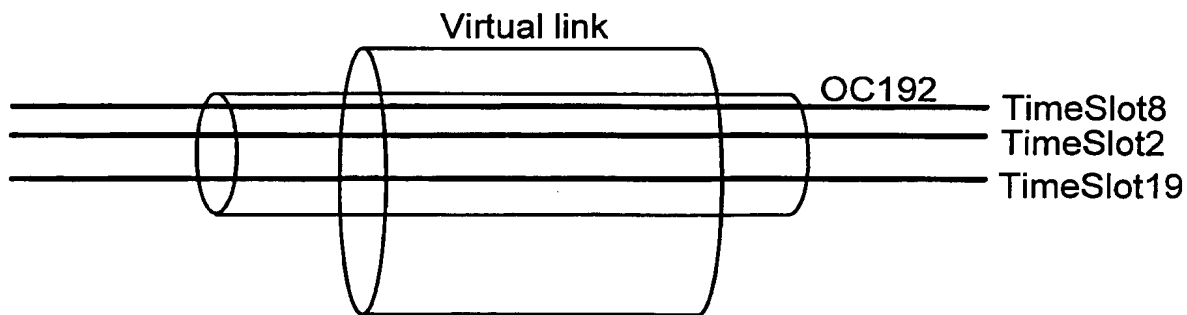


FIG. 5D

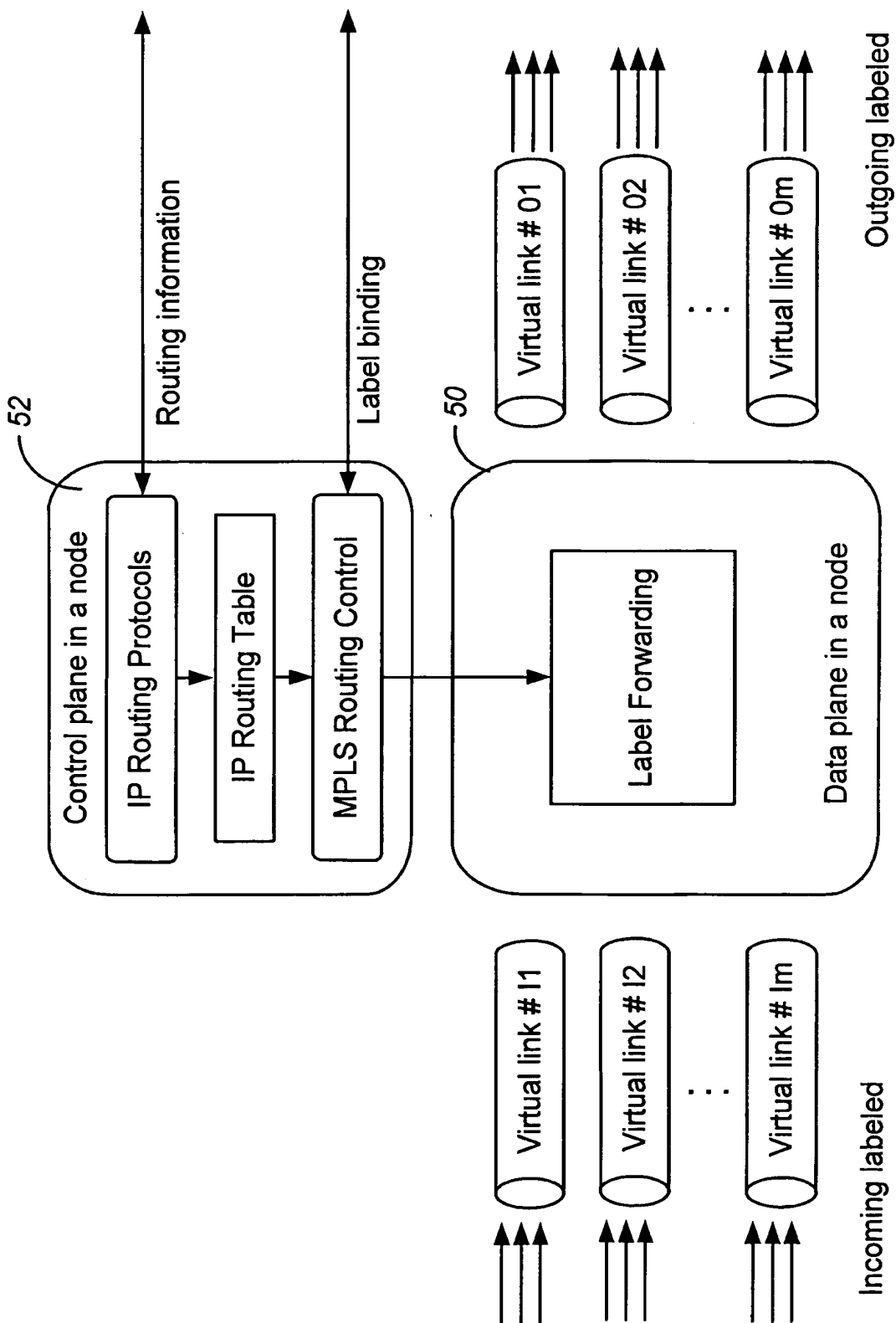


FIG. 6 LSR Architecture

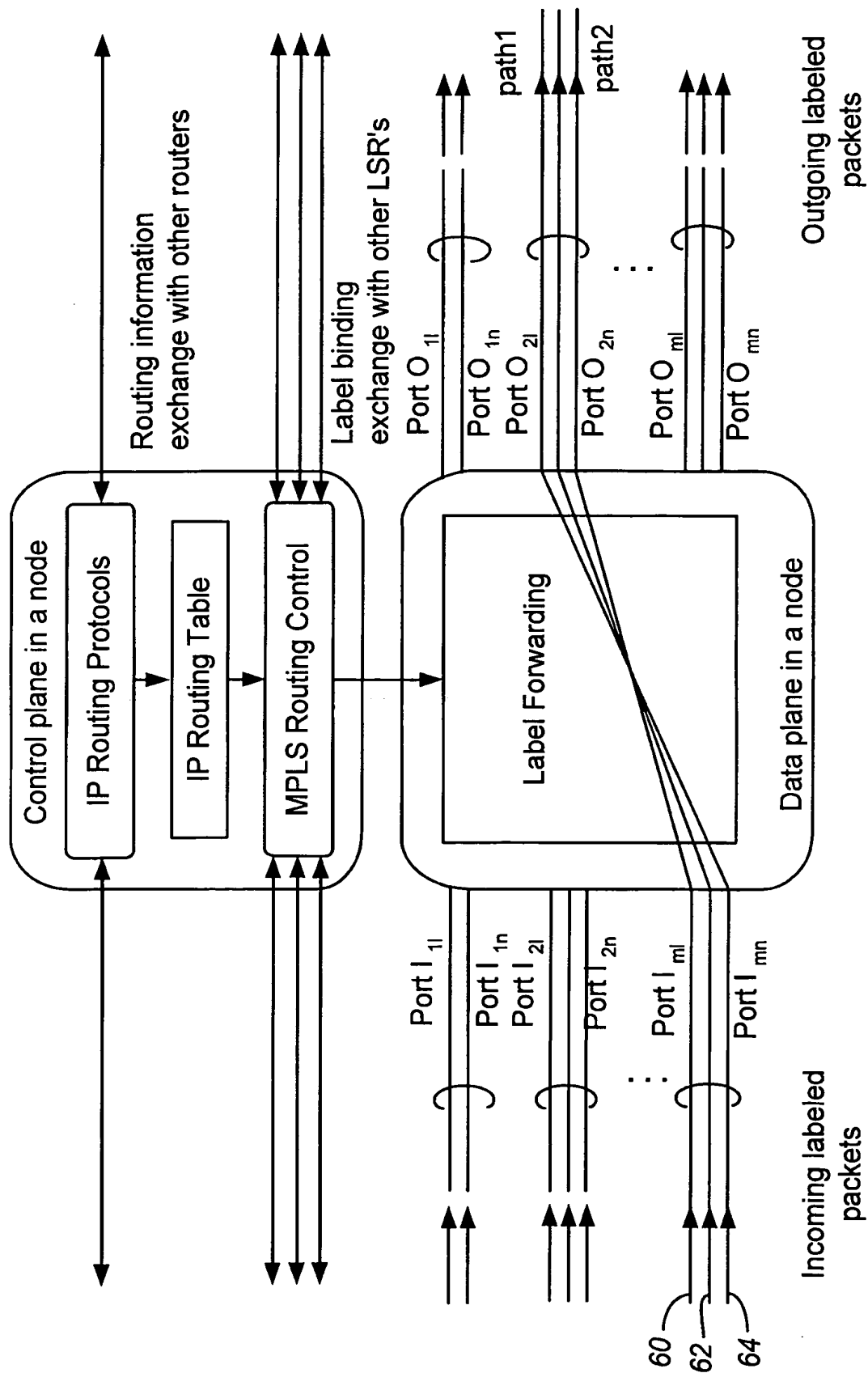
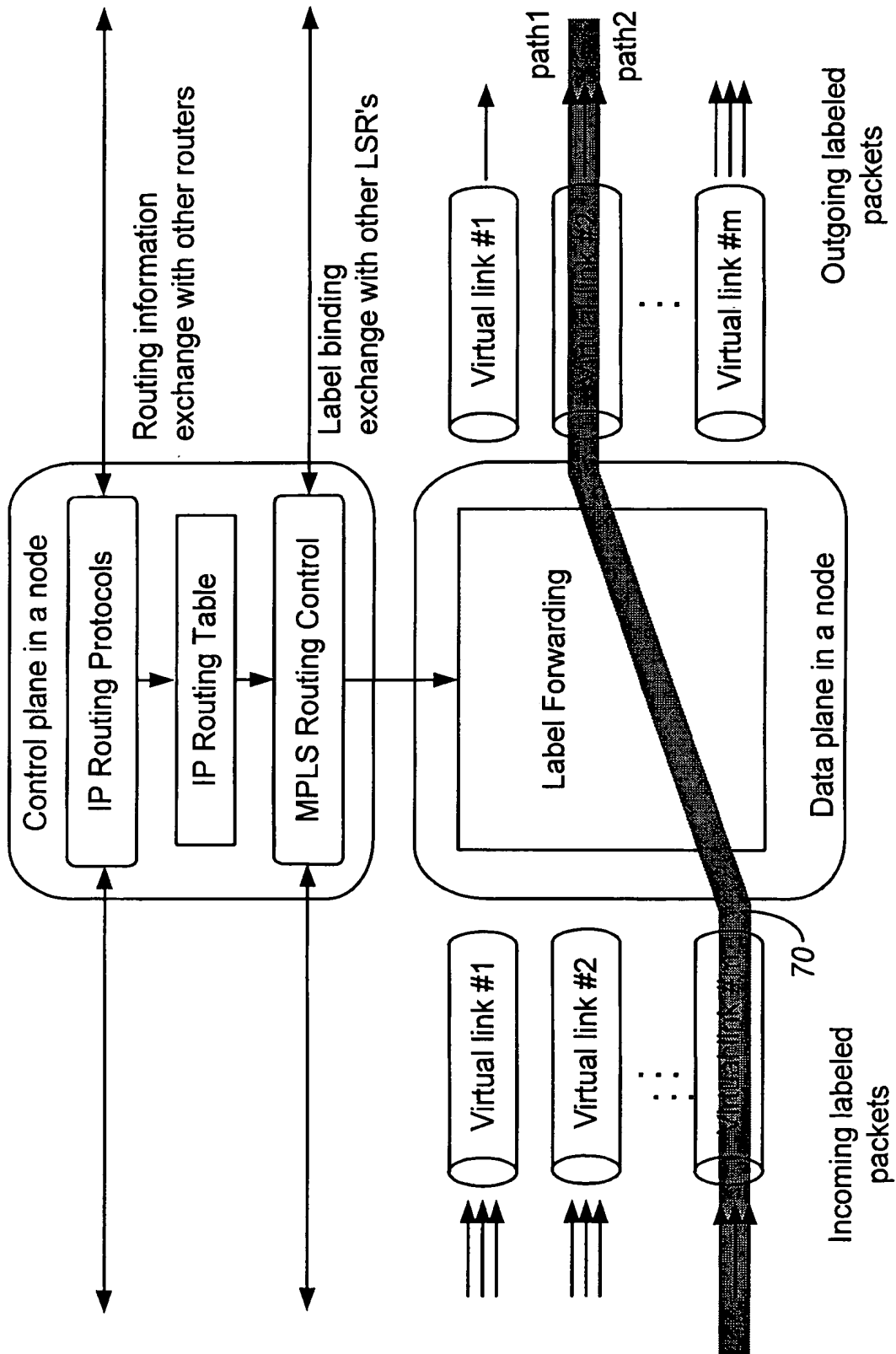


FIG. 7

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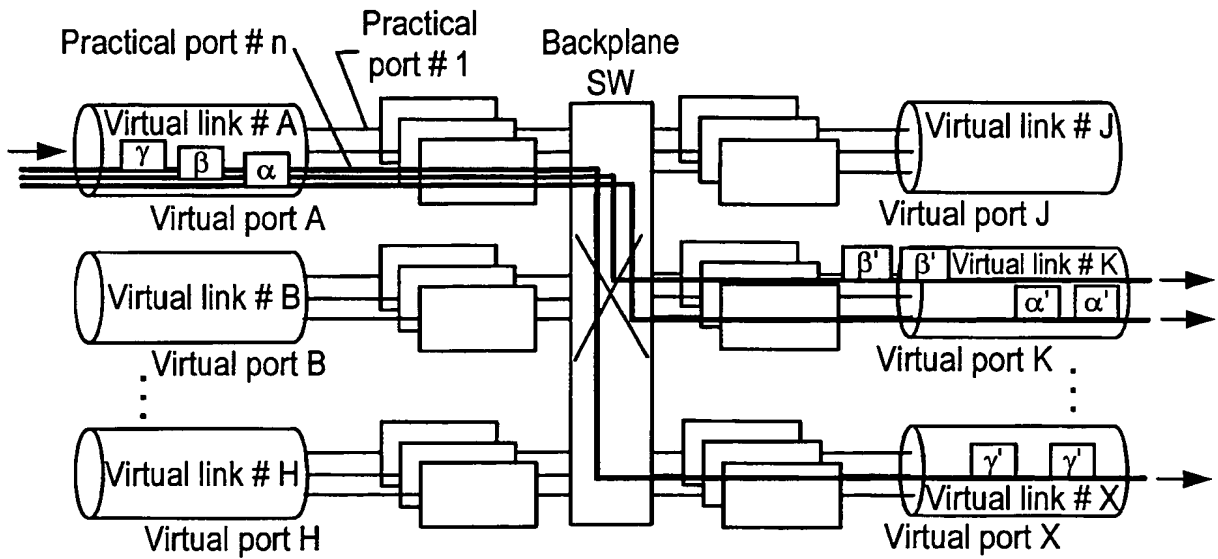


FIG. 9A

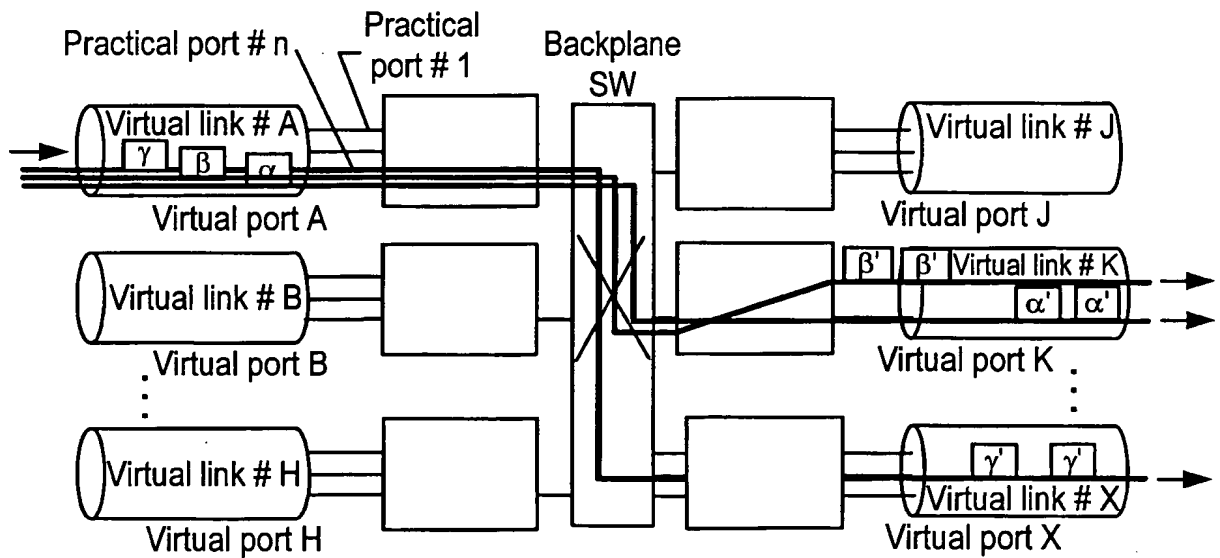


FIG. 9B

Label Forwarding Table maintained by the MPLS control plane

Input practical port#	Input virtual port#	Input Label	Output Label	Output virtual port#	Output practical port#
n	A	α	α'	K	$f(\alpha')$
n	A	β	β'	K	$f(\beta')$
n	A	γ	γ'	X	$f(\gamma')$
2	A	δ	δ'	B	$f(\delta')$
1	A	ϵ	ϵ'	B	$f(\epsilon')$
2	A	ζ	ζ'	H	$f(\zeta')$
1	A	η	η'	J	$f(\eta')$
5	A	σ	σ'	K	$f(\sigma')$
n	A	κ	κ'	X	$f(\kappa')$

Label Forwarding Table and mechanism to decide practical output port at the sending LSR

FIG. 10

Label Forwarding Table maintained by the MPLS control plane

Tag	Hash value of incoming label	Input practical port#	Input virtual port#	Input Label	Output Label	Output virtual port#	Output practical port#
○	$f(\alpha')$	n	A	α'	α''	K	$f(\alpha'')$
○	$f(\beta')$	n	A	β'	β''	K	$f(\beta'')$
○	$f(\gamma')$	n	A	γ'	γ''	X	$f(\gamma'')$
	$f(\delta')$	2	A	δ'	δ''	B	$f(\delta'')$
○	$f(\epsilon')$	1	A	ϵ	ϵ''	B	$f(\epsilon'')$
○	$f(\zeta')$	2	A	ζ	ζ''	H	$f(\zeta'')$
○	$f(\eta')$	1	A	η	η''	J	$f(\eta'')$
	$f(\sigma')$	5	A	σ	σ''	K	$f(\sigma'')$
	$f(\kappa')$	n	A	κ	κ''	X	$f(\kappa'')$

First lookup mechanism using a hash

FIG. 11